

COL362/662 Assignment 1

3 Level Architecture

Due Date: 1 Feb 2016

January 23, 2016

Theoretical

Questions:

1. Does 3 level architecture solve all the problems?
2. How can 3 level architecture be implemented? What transformations and data structures are needed?
3. Does 3 level architecture support more than 1 programming language?
4. How is data independence achieved?

Programming

Questions:

1. Implement part of 3 level architecture which should accept
 - Definition of schemas (which defines names of files and record structures with given attributes and length's together with keys)
 - and should output
 - Definition of data structure (of files) to store (or manage) the data as described in the schema.
2. Implement subschema definition which should accept
 - Definition of subschema which is a subset of the defined schema
 - and do the following
 - Check for correctness that subschema has been defined properly
 - Create view structures against which DML's can operate against the subschema.

Guidelines

- Assignment is to be done individually.
- Copying from web or from each other will result in penalty as per institute rules.
- Use course mailing list wisely for doubts and clarification.
- Marking scheme of the assignment is theoretical part 20 marks 5 marks each and programming part 20 marks Question1 4 marks and Question2 16 marks.
- You can use c/c++,java,python etc. for the implementation purpose.
- You should be strictly following the input specification written below, otherwise you will be penalized.

Input and Output Specification

1. Question 1

Input File

```
#number of tables
name of table1
#number of attribute in table1
( attribute1,type,isKey)
( attribute2,type,isKey)
.
.
.
#number of records in table1
record1
record2
.
.
.
name of the table 2
.
.
.
#number of key relations
relation1
relation2
.
.
```

- Format of the relation is ((table name,attribute),(table name,attribute)) the first pair is primary key and the table name it belongs to and second pair is foreign key and it's table.
- isKey is either 1 or 0. 1 indicates the attribute is a key 0 otherwise.
- Format of records will values seperated by comma.

Output file

Output **"Invalid"** if the tables does not follow the schemas specified.
Else display the each table name followed by the content of the table.

2. Question 2

Input File Format

```
#number of attributes in the subschema
(table name,attribute)
.
.
.
```

Output File

Output **"Invalid"** if the subschema does not follow the schemas entered in 1st part. Else display the content of the table following subschema(View). This content will come from the input taken from 1st part.